

## Network patterns and strength of orbital currents in layered cuprates

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### Abstract

In the frame of the t-J-G model we derive a microscopical expression for circulating orbital currents in layered cuprates using the anomalous correlation functions. In agreement with muon spin relaxation, nuclear quadrupolar resonance and neutron scattering (NS) experiments in  $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$  we successfully explain the order of magnitude and the monotonous increase of the internal magnetic fields resulting from these currents upon cooling. However, the marked enhancement of NS intensity at  $T_c$ , reported recently, seems to indicate a non-mean-field feature of coexistence between the current and superconducting states. A relation of this enhancement to the appearance of a small admixture of s-wave symmetry component of the conventional charge-density wave state and also the dependence of the sliding charge-current condensation energy on the phase of the order parameter are discussed.

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